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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (currently amended). A computer-implemented method for use in a tandem printer, the method comprising the steps of:

- (A) receiving a representation of a subset of an image printed by the printer;
- (B) identifying a first pattern in the subset of the image, the first pattern encoding a position of the subset along an a first axis of the image, wherein said first axis runs in a cross-web direction of said image and wherein said first pattern comprises a subset of a second pattern having a plurality of unique sub-patterns, wherein said second pattern comprises a plurality of lines running parallel to a

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- second axis of the image and a plurality of shapes abutting the plurality of lines;
- (C) identifying the position of the subset along the first axis of the image based on the first pattern by the steps comprising;
- (C) (1) identifying one of the plurality of unique sub-patterns in the first pattern by matching a pattern of abutting shapes in the subset of the image to a pattern of abutting shapes in the first pattern; and
- (C) (2) identifying the position of of the subset along the first axis based on the sub-pattern identified in step (C) (1);
- and
- (D) estimating a color misregistration along the first axis of the image based on the position of the subset along the first axis of the image.

Claim 2 (original). The method of claim 1, wherein the step (D) comprises steps of:

- (D) (1) identifying an expected distance between a first shape having a first color and a second shape having a second color in the subset of the image based on the position of the subset along the axis of the image;

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- (D) (2) estimating an actual distance between the first and second shapes based on the representation of the subset of the image; and
- (D) (3) estimating the color misregistration along the axis of the image as the difference between the expected distance and the estimate of the actual distance between the first and second shapes.

Claim 3 (canceled hereby).

Claim 4 (canceled hereby).

Claim 5 (canceled hereby).

Claim 6 (currently amended). The method of claim 1, wherein ~~the~~ said printer comprises a first print head for printing at a first resolution and a second print head for printing at a second resolution that differs from the first resolution, wherein the second pattern comprises a plurality of shapes printed by the first and second print heads, and wherein each of the plurality of shapes is printed solely by a single one of the first and second print heads.

Claim 7 (currently amended). A computer-implemented method for use in a tandem printer comprising a first

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print head for printing at a first resolution and a second print head for printing at a second resolution that differs from the first resolution, the method comprising steps of:

- (A) receiving a representation of a subset of an image printed by the printer;
- (B) identifying a first pattern in the subset of the image, the first pattern encoding a position of the subset along an a first axis of the image, the first axis running in a cross-web direction of the image, the first pattern comprising a subset of a second pattern having a plurality of zones containing a plurality of unique sub-patterns, wherein said second pattern comprises a plurality of lines running parallel to a second axis of the image and a plurality of shapes abutting the plurality of lines;
- (C) identifying the position of the subset along the first axis of the image based on the first pattern by performing steps of:
  - (C ) (1) identifying one of the plurality of unique sub-patterns in the first pattern by matching a pattern of abutting shapes in the subset of the image to a pattern of abutting shapes in the first pattern; and

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(C) (2) identifying the position of the subset  
along the first axis of the image based on the  
~~identified~~ sub-pattern identified in step  
(C) (1); and

(D) estimating a color misregistration along  
the first axis of the image based on the  
position of the subset along the first  
axis of the image by performing steps of:

(D) (1) identifying an expected distance  
between a first shape having a first color and a  
second shape having a second color in the subset  
of the image based on the position of the subset  
along the first axis of the image;

(D) (2) estimating an actual distance between the  
first and second shapes based on the  
representation of the subset of the image; and

(D) (3) estimating the color misregistration  
along the first axis of the image as the  
difference between the expected distance and the  
estimate of the actual distance between the  
first and second shapes.

Claim 8 (canceled hereby).

Claim 9 (currently amended). A printer comprising:  
means for receiving a representation of a subset of  
an image printed by the printer;

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first identification means for identifying a first pattern in the subset of the image, the first pattern encoding a position of the subset along ~~an~~ a first axis of the image, wherein said first axis runs in a cross-web direction of said image and wherein said first pattern comprises a subset of a second pattern having a plurality of unique sub-patterns, wherein said second pattern comprises a plurality of lines running parallel to a second axis of the image and a plurality of shapes abutting the plurality of lines;

second identification means for identifying the position of the subset along the axis of the image based on the first pattern, comprising means for identifying one of the plurality of unique sub-patterns in the first pattern by matching a pattern of abutting shapes in the subset of the image to a pattern of abutting shapes in the first pattern; and means for identifying the position of the subset along the first axis based on the subpattern identified ; and

means for estimating a color misregistration along the first axis of the image based on the position of the subset along the first axis of the image.

Claim 10 (original). The printer of claim 9, wherein the means for estimating comprises:

means for identifying an expected distance between a first shape having a first color and a second shape having a second color in the subset of the image based

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on the position of the subset along the axis of the image;

means for estimating an actual distance between the first and second shapes based on the representation of the subset of the image; and

means for estimating the color misregistration along the axis of the image as the difference between the expected distance and the estimate of the actual distance between the first and second shapes.

Claim 11 (canceled hereby).

Claim 12 (canceled hereby).

Claim 13 (currently amended). The printer of claim 9, wherein the printer further comprises a first print head for printing at a first resolution and a second print head for printing at a second resolution that differs from the first resolution, wherein the second pattern comprises a plurality of shapes printed by the first and second print heads, and wherein each of the plurality of shapes is printed solely by a single one of the first and second print heads.

Claim 14 (currently amended). A data structure tangibly embodied in a computer readable-medium and suitable for printing as a calibration image for use in performing color registration correction in a multi-

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color printer, the data structure representing an image having a first axis, the image comprising a plurality of regions positioned along the first axis, the plurality of regions comprising a plurality of patterns, each pattern P in the plurality of patterns encoding the position of pattern P along the first axis and comprising a plurality of lines positioned along the first axis and running parallel to a second axis of the image; and  
a plurality of shapes abutting the plurality of lines.

Claim 15 (canceled hereby).

Claim 16 (currently amended). The data structure of claim ~~15~~ 14, wherein the printer comprises a plurality of print heads, wherein the plurality of lines have a plurality of colors, and wherein each of the plurality of lines has a single color suitable for printing by a single print head in the printer.

Claim 17 (original). The data structure of claim 16, wherein the plurality of lines includes at least one line of each of the colors printable by a single one of the plurality of print heads.

Claim 18 (currently amended). The data structure of claim ~~15~~ 14, wherein each of the plurality of lines is



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exactly one pixel wide, and wherein each of the plurality of abutting shapes is exactly one pixel wide.

Claim 19 (original). A data structure tangibly embodied in a computer readable-medium and suitable for printing as a calibration image for use in performing color registration correction in a multi-color printer comprising a plurality of print heads, the data structure representing an image having a first axis, the image comprising a plurality of regions positioned along the first axis, the plurality of regions comprising a plurality of patterns, each pattern P in the plurality of patterns encoding the position of pattern P along the first axis, the plurality of patterns comprising: (1) a plurality of lines positioned along the first axis and running parallel to a second axis of the image; and (2) a plurality of shapes abutting the plurality of lines, wherein the plurality of lines have a plurality of colors, and wherein each of the plurality of lines has a single color suitable for printing by a single print head in the printer.

Claim 20 (original). A computer-implemented method for use in a printer comprising a first print head for printing at a first resolution and a second print head for printing at a second resolution that differs from the first resolution, the method comprising steps of:

- (A) receiving a representation of a subset of an image printed by the printer;

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- (B) identifying, in the subset of the image, a first shape printed by the first print head;
- (C) identifying, in the subset of the image, a second shape printed by the second print head;
- (D) estimating locations of the first and second shapes along the first axis of the image based on the representation of the subset of the image; and
- (E) estimating a color misregistration along the first axis of the image as the difference between the location of the first shape and the location of the second shape along the first axis of the image.

Claim 21 (original). The method of claim 20, wherein the printer is a tandem printer and wherein the first axis runs in a down-web direction of the image.

Claim 22 (original). The method of claim 20, wherein the step (D) comprises steps of:

- (D)(1) identifying a center of the first shape along the first axis;
- (D)(2) identifying a center of the second shape along the first axis;

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- (D) (3) estimating the location of the first shape as the identified center of the first shape; and
- (D) (4) estimating the location of the second shape as the identified center of the second shape.

Claim 23 (original). The method of claim 20, wherein the first shape consists of a first pixel printed by the first print head and wherein the second shape consists of a second pixel printed by the second print head.

Claim 24 (original). A computer-implemented method for use in a tandem printer comprising a first print head for printing at a first resolution and a second print head for printing at a second resolution that differs from the first resolution, the method comprising steps of:

- (A) receiving a representation of a subset of an image printed by the printer;
- (B) identifying, in the subset of the image, a first shape printed by the first print head;
- (C) identifying, in the subset of the image, a second shape printed by the second print head;

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- (D)       estimating locations of the first and second shapes along a first axis of the image based on the representation of the subset of the image, the first axis running in a down-web direction of the printer, by performing steps of:
- (1)       identifying a center of the first shape along the first axis;
  - (2)       identifying a center of the second shape along the first axis;
  - (3)       estimating the location of the first shape as the identified center of the first shape; and
  - (4)       estimating the location of the second shape as the identified center of the second shape.
- (E)       estimating a color misregistration along the first axis of the image as the difference between the location of the first shape and the location of the second shape along the first axis of the image.

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Claim 25 (original). A printer comprising:  
a first print head for printing at a first resolution;  
a second print head for printing at a second resolution that differs from the first resolution;  
means for receiving a representation of a subset of an image printed by the printer;  
first identification means for identifying, in the subset of the image, a first shape printed by the first print head;  
second identification means for identifying, in the subset of the image, a second shape printed by the second print head;  
means for estimating locations of the first and second shapes along the first axis of the image based on the representation of the subset of the image; and  
means for estimating a color misregistration along the first axis of the image as the difference between the location of the first shape and the location of the second shape along the first axis of the image.

Claim 26 (original). The printer of claim 25, wherein the printer comprises a tandem printer and wherein the first axis runs in a down-web direction of the image.

Claim 27 (original). The printer of claim 25, wherein the first identification means comprises:

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means for identifying a center of the first shape  
along the first axis;

means for identifying a center of the second shape  
along the first axis;

means for estimating the location of the first  
shape as the identified center of the first shape; and

means for estimating the location of the second  
shape as the identified center of the second shape.

Claim 28 (original). A computer-implemented method  
for use in a printer, the method comprising steps of:

- (A) receiving a representation of a subset of  
an image printed by the printer, the  
subset of the image comprising a first  
plurality of shapes printed by the first  
and second print heads;
- (B) identifying a position of the subset along  
a first axis of the image;
- (C) identifying an expected distance between a  
first one of the first plurality of shapes  
printed by the first print head and a  
second one of the first plurality of  
shapes printed by the second print head  
based on the position of the subset along  
the first axis of the image;
- (D) estimating an actual distance between the  
first and second shapes based on the  
representation of the subset of the image;

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- (E) estimating a first color misregistration along the first axis as the difference between the expected distance and the estimated actual distance between the first and second shapes;
- (F) identifying, in the subset of the image, a third shape printed by the first print head;
- (G) identifying, in the subset of the image, a fourth shape printed by the second print head;
- (H) estimating locations of the third and fourth shapes along a second axis of the subset of the image based on the representation of the subset of the image; and
- (I) estimating a second color misregistration along the second axis as the difference between the location of the third shape and the location of the fourth shape along the second axis of the image.

Claim 29 (original). The method of claim 28, further comprising a step of:

- (J) prior to the step (A), printing the image.

Claim 30 (original). The method of claim 28, further comprising steps of:

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- (J) generating a first misregistration correction based on the first color misregistration;
- (K) generating a second misregistration correction based on the second color misregistration; and
- (L) applying the first and second misregistration corrections to a subsequent image printed by the printer.

Claim 31 (original). A printer comprising:

means for receiving a representation of a subset of an image printed by the printer, the subset of the image comprising a first plurality of shapes printed by the first and second print heads;

means for identifying a position of the subset along a first axis of the image;

means for identifying an expected distance between a first one of the first plurality of shapes printed by the first print head and a second one of the first plurality of shapes printed by the second print head based on the position of the subset along the first axis of the image;

means for estimating an actual distance between the first and second shapes based on the representation of the subset of the image;

means for estimating a first color misregistration along the first axis as the difference between the



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expected distance and the estimated actual distance  
between the first and second shapes;

means for identifying, in the subset of the image,  
a third shape printed by the first print head;

means for identifying, in the subset of the image,  
a fourth shape printed by the second print head;

means for estimating locations of the third and  
fourth shapes along a second axis of the subset of the  
image based on the representation of the subset of the  
image; and

means for estimating a second color misregistration  
along the second axis as the difference between the  
location of the third shape and the location of the  
fourth shape along the second axis of the image.

Claim 32 (currently amended). The printer of claim  
~~28~~ 31, further comprising:

means for generating a first misregistration  
correction based on the first color misregistration;

means for generating a second misregistration  
correction based on the second color misregistration;  
and

means for applying the first and second  
misregistration corrections to a subsequent image  
printed by the printer.